

LISTING OF CLAIMS:

Claims 1-30 are pending in this application. Claims 1 and 18 are independent. All of the pending claims have been rejected either under 35 U.S.C. §102(e) or 35 U.S.C. §103(a). The following listing of claims will replace all prior versions, and listings, of claims in the application. Claims 1 and 18 are herein amended, and new claims 31-36 are herein added.

1. (CURRENTLY AMENDED) An image sensing element for sensing an image formed by an image sensing lens, comprising a pixel which includes a first light-receiving region that includes a region where a principal ray having passed through the image sensing lens is incident, and a second light-receiving region that does not include the region where the principal ray having passed through the image sensing lens is incident when a stop of the image sensing lens is in a stopped-down aperture state thereby reducing the degree of decrease in sensor output compared with the sensor output in a full aperture state of the image sensing lens.

2. (ORIGINAL) The element according to claim 1, wherein the second light-receiving region includes two divided light-receiving regions, and the two divided light-receiving regions are so arranged as to sandwich the first light-receiving region.

3. (ORIGINAL) The element according to claim 2, wherein the two divided light-receiving regions are used to at least detect a focus state of the image sensing lens.

4. (ORIGINAL) The element according to claim 2, wherein the two divided light-receiving regions are used to detect a focus state of the image sensing lens and photograph an object.

5. (ORIGINAL) The element according to claim 2, wherein one of the two divided light-receiving regions receives a beam from one of two predetermined regions on a pupil of the image sensing lens and the other of the two divided light-receiving regions receives a beam from the other of the two predetermined regions on the pupil of the image sensing lens, the two predetermined regions being regions that sandwich an optical axis.

6. (ORIGINAL) The element according to claim 2, wherein the first light-receiving region is used to determine a time during which charges are accumulated in the second light-receiving region.

7. (ORIGINAL) The element according to claim 2, further comprising a function of individually outputting charges accumulated in the first light-receiving region and charges accumulated in the two divided light-receiving regions, and a function of outputting a sum of charges accumulated in the first light-receiving region and charges accumulated in the two divided light-receiving regions.

8. (ORIGINAL) The element according to claim 2, wherein an interval between the two divided light-receiving regions is relatively narrow at a center of the first light-receiving region and relatively wide at two ends of the first light-receiving region.

9. (ORIGINAL) The element according to claim 2, wherein the first light-receiving region is relatively narrow at a center and relatively wide at two ends.

10. (ORIGINAL) The element according to claim 2, wherein the first light-receiving region is narrower than a width of each of the two divided light-receiving regions at a center, and wider than the width of each of the two divided light-receiving regions at two ends.

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11. (ORIGINAL) The element according to claim 2, wherein a region formed from the first and second light-receiving regions has a substantially regular polygonal shape.

12. (ORIGINAL) The element according to claim 2, wherein the second light-receiving region has a shape substantially obtained by cutting off each corner of a square.

13. (ORIGINAL) The element according to claim 1, further comprising a microlens which causes two divided light-receiving regions to respectively receive beams from two predetermined regions on a pupil of the image sensing lens, the two predetermined regions being regions that sandwich an optical axis.

14. (ORIGINAL) The element according to claim 1, wherein the second light-receiving region is used to at least detect a focus state of the image sensing lens.

15. (ORIGINAL) The element according to claim 1, wherein the second light-receiving region is used to detect a focus state of the image sensing lens and photograph an object.

16. (ORIGINAL) The element according to claim 1, wherein the first light-receiving region is used to determine a time during which charges are accumulated in the second light-receiving region.

17. (ORIGINAL) The element according to claim 1, further comprising a microlens on a region formed from the first and second light-receiving regions.

18. (CURRENTLY AMENDED) An image sensing apparatus comprising:

an image sensing element having a pixel which includes a first light-receiving region that includes a region where a principal ray having passed through an image sensing lens is incident, and a second light-receiving region that does not include the region where the principal ray having passed through the image sensing lens is incident when a stop of the image sensing lens is in a stopped-down aperture state thereby reducing the degree of decrease in sensor output compared with the sensor output in a full aperture state of the image sensing lens; and

a control unit for detecting a focus state of the image sensing lens by using the second light-receiving region, and performing focus adjustment.

19. (ORIGINAL) The apparatus according to claim 18, wherein said control unit controls photographing operation so as to photograph an object by using the second light-receiving region.

20. (ORIGINAL) The apparatus according to claim 18, wherein said control unit determines, by using the first light-receiving region, a time during which charges are accumulated in the second light-receiving region.

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21. (ORIGINAL) The apparatus according to claim 18, wherein said control unit controls a time during which charges are accumulated in the second light-receiving region, in accordance with an exposure amount of the first light-receiving region in focus adjustment.

22. (ORIGINAL) The apparatus according to claim 18, wherein said control unit individually reads out charges accumulated in the first light-receiving region and charges accumulated in the second light-receiving region in focus adjustment, and reads out a sum of charges accumulated in the first light-receiving region and charges accumulated in the two divided light-receiving regions in photography.

23. (ORIGINAL) The apparatus according to claim 18, wherein the second light-receiving region includes two divided light-receiving regions, and the two divided light-receiving regions are so arranged as to sandwich the first light-receiving region.

24. (ORIGINAL) The apparatus according to claim 23, wherein the two divided light-receiving regions receive beams from two predetermined regions on a pupil of the image sensing lens, the two predetermined regions being regions that sandwich an optical axis.

25. (ORIGINAL) The apparatus according to claim 23, wherein an interval between the two divided light-receiving regions is relatively narrow at a center of the first light-receiving region and relatively wide at two ends of the first light-receiving region.

26. (ORIGINAL) The apparatus according to claim 23, wherein the first light-receiving region is relatively narrow at a center and relatively wide at two ends.

27. (ORIGINAL) The apparatus according to claim 23, wherein the first light-receiving region is narrower than a width of each of the two divided light-receiving regions at a center, and wider than the width of each of the two divided light-receiving regions at two ends.

28. (ORIGINAL) The apparatus according to claim 23, wherein a region formed from the first and second light-receiving regions has a substantially regular polygonal shape.

29. (ORIGINAL) The apparatus according to claim 23, wherein the second light-receiving region has a shape substantially obtained by cutting off each corner of a square.

30. (ORIGINAL) An image processing apparatus comprising the image sensing apparatus defined in claim 18.

31. (NEW) An image sensing apparatus in which a plurality of pixels for receiving an image formed by an image taking lens unit, each of the plurality of pixels comprising:

an optical unit including a lens portion;

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a first light-receiving region where a principal ray of the image taking lens unit is incident; and

a second light-receiving region where the principal ray is not incident.

32. (NEW) The apparatus according to claim 31, wherein the second light-receiving region includes two sub light-receiving regions arranged to sandwich the first light-receiving region.

33. (NEW) The apparatus according to claim 31, wherein the lens portion is arranged to make light-receiving surfaces of the first and second light-receiving regions and a pupil position of the image taking lens unit be substantially conjugate to each other.

34. (NEW) The apparatus according to claim 32, wherein the two sub light-receiving regions respectively receive rays from different regions on a pupil region of the image taking lens unit.

35. (NEW) The apparatus according to claim 34, further comprising a detection circuit arranged to detect a focus state of the image taking lens unit based on outputs of the sub light-

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receiving regions.

36. (NEW) The apparatus according to claim 35, further comprising an adder circuit arranged to add outputs of the sub light-receiving regions and output of the first light-receiving region.